

REMARKS

This application has been reviewed in light of the Office Action dated September 17, 2008.

Claims 1 and 3-7 are now presented for examination. Claims 2 and 8-18 were previously cancelled without prejudice. Claim 1, which is the only independent claim, has been amended. Favorable review is respectfully requested.

Claim 1, directed to an integrated circuit device package, has been amended to recite that the electrically active surface of the device includes a central region and a peripheral region; metallized bumps (extending from sites on circuit traces on that surface) are disposed in the peripheral region, and a dielectric molding resin (at least partially encapsulating the device) covers this central region. This claim feature is clearly shown in the specification in FIG. 2, where the electrically active face 16 of device 12 has metalized bumps 18 at the peripheral region thereof, and the molding resin 26 covers the central region of the active face (see specification, page 5, lines 4-10 and 20-21).

Claims 1 and 4 were rejected under 35 U.S.C. § 103(a) as unpatentable over Seo et al. (U.S. Pat. No. 6,858,919) in view of Minamio et al. (U.S. Pat. No. 6,680,524). The applicants respectfully submit that amended independent claim 1 is patentable over the cited art, for the following reasons.

As noted above, claim 1 now includes the limitation that the electrically active surface of the device includes a central region and a peripheral region, with the metallized bumps disposed in the peripheral region and the dielectric molding resin covering the central region. This limitation is not taught or suggested in Seo et al. Seo et al. is understood to disclose a semiconductor package where a mounting substrate is located opposite the central region of the device active surface (Seo et al., FIGS. 3a, 3b, 4b; col. 5, lines 25-29). Seo et al. explicitly refers to central bond pads, located in the central region of the device surface (col. 5, lines 22-23). Even if the bond pads and leads of Seo et al. were viewed as metallized bumps as recited in claim 1, the added limitation in claim 1 is clearly contrary to the teaching of the Seo et al. reference.

In addition, claim 1 recites an interface between the integrated circuit device (having a backside surface) and a dielectric molding resin; the interface has an end portion between the

integrated circuit device at the exposed backside surface and the dielectric molding resin adjacent thereto, and an interior portion substantially parallel to the backside surface. Seo et al. discloses a semiconductor package where a chip is encapsulated and has an exposed backside. However, the chip in Seo et al. has straight sides; accordingly, there can be no suggestion of an interface with an end portion and an interior portion as recited in claim 1.

Furthermore, since the chip in Seo et al. has straight sides, it follows that Seo does not disclose a backside surface area smaller than the front (electrically active) surface area, as also required by claim 1. The Examiner has acknowledged this (Office Action, page 3, first full paragraph), and states that Minamio et al. discloses the claimed interface. The applicants wish to point out that Seo et al. and Minamio et al. do not show "analogous packages." Specifically, the Minamio et al. package uses wirebond sites (connecting to an active surface away from the substrate) while the Seo et al. package uses flip-chip connections (where the active surface faces toward the substrate). The Minamio et al. reference is not pertinent to the package of claim 1, since Minamio et al. offers no suggestion of an exposed device backside; indeed, Minamio et al. teaches that the non-active surface of the device should be in contact with the substrate, rather than exposed.. Minamio et al. furthermore cannot offer any suggestion that the device has an exposed backside for improved thermal dissipation. Accordingly, Minamio et al. does not and cannot suggest modifying the package of Seo et al. to include an interface with an end portion exposed at the backside.

As noted above, Seo et al. clearly shows a device in contact with a substrate, either with solder bumps or thermally conducting adhesive, in the central region of the device. This is in contrast to amended claim 1, where the molding resin covers the central region. The Minamio et al. reference has wiring electrodes on a substrate rather than metallized bumps, and thus does not have an analogous structure.

Claims 3 and 5, dependent from claim 1, were rejected as obvious from a combination of Seo et al. and Minamio et al. with Masumoto et al. (U.S. Pat. No. 6,759,745) and Kinsman (U.S. Pat. No. 6,700,206), respectively. Claims 6 and 7, also dependent from claim 1, were rejected as obvious from the combination of Seo et al. and Minamio et al. with Okada et al. (U.S. Pat. No. 7,192,798). The Masumoto et al. and Kinsman references do not suggest a device with the claimed interface, or an exposed backside. The Okada reference describes an exposed device surface, but does not suggest peripheral and central regions of the electrically

active surface. Accordingly, none of these additional references remedy the above-noted defects of Seo et al. and Minamio et al. as references against independent claim 1. Claim 1, and claims 3, 5, 6 and 7 dependent therefrom, are thus not rendered obvious by any of the cited references, or by a combination thereof.

The other claims pending in this application are dependent from the independent claim discussed above and are believed to be patentable for the same reasons. Since each dependent claim is directed to a separate aspect of the invention, however, the individual consideration of each claim on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, favorable consideration and early passage to issue of the application are respectfully requested.

The applicants' undersigned attorney may be reached by telephone at 212-551-2625. All correspondence should continue to be directed to the address given below, which is the address associated with Customer Number 27267.

Respectfully submitted,



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